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Roadless Area Conservation

National Forest System Lands in Idaho

MINERALS SPECIALIST REPORT

Timothy Abing, Physical Scientist

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ABSTRACT

On National Forest System (NFS) lands, minerals are classified according to the law under which they are managed. Minerals are classified as locatable, leasable, and salable (common variety). This distinction is important because each classification is subject to different requirements for exploration and development, and in the case of locatable minerals, the Forest Service cannot prohibit exploration and development. This report presents the "affected environment" for minerals within Idaho's inventoried roadless areas, which is a general overview of the occurrence and development potential for each of the three mineral classifications. In addition, the affected environment section discusses abandoned mines and facilities, energy corridors, and geological and paleontological resources.

The "Results" section of this report discusses the indirect and cumulative effects on the ability to develop mineral resources of each of the three alternatives. None of the alternatives will have any direct effects on mineral resource development due to: 1) the exclusion of outstanding mineral rights granted by lease or statute; and 2) the projected effects will occur at a later time and therefore by definition are considered indirect. This section also discusses the effects to geological and paleontological resources, and the ability to reclaim abandoned mines/facilities under each of the alternatives.

ANALYSIS

Methodology

This report mimics the format and approach followed in the Minerals Specialist Report that was prepared for the 2001 Roadless Area Conservation Rule. Each classification of minerals is generally discussed, followed by a more focused discussion on the mineral resources with development potential in Idaho's roadless areas.

Assumptions

- The location and density of existing roads within inventoried roadless areas would not alone be adequate to allow leasable minerals to be efficiently and economically developed. Therefore, the prohibition of road construction or reconstruction would preclude any leasable mineral activity on lands where the prohibition exists. This assumption is supported by recent actions taken by two lessees of 27 oil and gas leases covering 57,004 acres containing roadless areas in Utah's Uinta National Forest. Upon learning that their leases would be subject to the reinstated 2001 roadless rule, these lessees requested the BLM suspend their leases, asserting that they were "prevented from operating on the leases."
- Directional drilling technology may be used to explore portions of leases designated as "no surface occupancy" adjacent to areas where surface occupancy may be allowed, but it would not be the principle means to explore for

geothermal or oil and gas resources in inventoried roadless areas. Industry would not incur the extra expense of direction drilling without the promise of the full economic enjoyment of the entire lease area. This is particularly true in relatively unexplored areas such as Idaho's Roadless Areas, where the complex geology and lack of known commercial production greatly increase the financial risk of drilling.

- No Surface Occupancy stipulation on leases within inventoried roadless areas will preclude development of the leased mineral resource. This is due to that directional drilling wouldn't be economically feasible given the expanse of the occupancy prohibition combined with a lack of private inholdings or adjacent non-IRA lands where occupancy would be allowed.
- There will be only one operating phosphate mine (Smoky Canyon) impacting inventoried roadless areas for the foreseeable future.
- Demand for mineral materials from National Forest System lands will remain constant for the foreseeable future.

Information Used

Information used in this analysis came from two main sources:

- Agency sources, such as national databases, forest plans, mineral-related environmental analyses, and personnel at the forest level.
- Other than agency sources, such as the U.S. Geological Survey and Dept. of Energy publications, USDI Bureau of Land Management national databases and personal communications, State of Idaho websites and publications, etc.

Affected Environment

Locatable Minerals

Locatable minerals include commodities like gold, silver, molybdenum, copper, lead, zinc, cobalt, uranium, dimension stone, and certain varieties of limestone, which are subject to appropriation under the General Mining Law of 1872 (17 Stat. 91, as amended). This law provides United States citizens a possessory right to prospect, explore and develop these minerals on public domain lands. It also provides for reasonable access to conduct these activities. Depending on the stage of exploration or development, reasonable access can range from unimproved temporary roads for prospecting or drilling to more permanent improved roads for full mine development and transportation of ore. By virtue of the Organic Administration Act (16 U.S.C. §§ 482), this possessory right is subject to rules and regulations of the Forest Service on NFS lands.

Valuable deposits of locatable mineral resources potentially exist in Idaho's inventoried roadless areas. Therefore, in the long term, it is reasonable to assume that future

exploration, mining, and mineral processing activities will continue to occur in inventoried roadless areas where valuable deposits exist. While it is not possible to predict where and when development will occur, the existence of active mining claims within a given roadless area is an indicator of both potential for a valuable mineral deposit and for future mineral-related activity. Of the 281 Idaho IRA's, 102 IRA's contain an estimated 2,085 active mining claims[1]. The number of claims within roadless areas is subject to change as new claims are staked and others are allowed to lapse by claimholders.

Exploration and development of locatable mineral resources are non-discretionary activities, meaning that the Forest Service cannot prohibit reasonably necessary activities required for the exploration, prospecting, or development of valuable mineral deposits. However, the Forest Service has the authority and the obligation to regulate locatable mineral operations in order to prevent or minimize damage to NFS surface resources. This is the purpose of regulations found at 36 CFR 228, Subpart A. In support of this obligation, a forest manager may direct a certified mineral examiner to conduct a surface-use determination (SUD) to ensure that a proposed mineral exploration or development activity conforms to reasonable industry standards for that type of activity, based on the appropriate stage of development of the operation. If the SUD concludes that the proposed activity is not reasonable, the forest manager would inform the operator that changes or additions are needed in order for the proposal to be approved under 36 CFR 228.

LEASABLE MINERALS

Leasable minerals are those minerals that can be explored for and developed under one of several federal mineral leasing acts. Leasable minerals in Idaho include energy mineral resources such as oil, gas, and geothermal and non-energy minerals such as phosphate. Moreover, for lands acquired or administered under the Weeks Act (PL 61-435) and the Bankhead-Jones Act (PL 75-210), the 1872 Mining Law does not apply and deposits of otherwise locatable minerals like gold and garnet are leasable.

The Government's decision regarding whether to lease leasable mineral resources is discretionary, meaning that leasing may or may not be allowed. The Bureau of Land Management (BLM) has the exclusive authority to dispose of leasable mineral resources on NFS lands. However, BLM must have the consent of the Forest Service before it can lease oil, gas, or geothermal resources. In the case of phosphate, BLM must seek Forest Service recommendations for measures to protect surface resources, but may lease without Forest Service consent. A federal lease conveys to the holder the right to explore and develop the leased commodity subject to lease terms, stipulations, and applicable regulations.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities,

[1] Bureau of Land Management LR2000 Database; June 2007

power lines, pipelines, and communication sites. Efficient exploration and development of leasable minerals is generally not possible without the ability to build new roads or reconstruct existing roads where needed throughout a lease. In the case of oil, gas, and geothermal resources, industry has the capability to avoid disturbing sensitive surface resources by using directional drilling techniques. However, directional drilling has technical and economic limitations. For the purposes of this report, it is assumed that it would not be widely used in Idaho as a principal means to explore and develop leasable minerals because of economic and technological limitations such as unknown mineral resource potential and complex geology.

An environmental impact statement is generally prepared on a forest-wide basis to support leasing decisions. This analysis would also address leasing within inventoried roadless areas. The effects of any future lease exploration or development are also addressed in subsequent environmental analysis, which may be another site-specific environmental impact statement. Exploration and development activities for oil and gas, geothermal, and phosphate resources would be most affected by the action alternatives.

Geothermal – Geothermal resources are underground reservoirs of hot water or steam created by heat from the earth. Geothermal steam and hot water can reach the surface of the earth in the form of hot springs, geysers, mud pots, or steam vents. These resources also can be accessed by wells, and the heat energy can be used for generating electricity or other "direct uses", such as heating greenhouses, homes, commercial buildings, and aquaculture operations or for dehydrating vegetables. Direct uses of geothermal energy do not require the intermediate to high temperatures required for power generation. Geothermal is a "clean" energy source in that it does not produce any greenhouse gases.

The full extent of Idaho's geothermal resource potential has yet to be discovered. The temperatures of Idaho's highest potential geothermal resources tend to be lower than 110° C, which generally makes them unsuitable for power generation.[2] However, Idaho has recently experienced the construction start of its first commercial geothermal power facility on private land at Raft River in 2006. The Raft River facility will use binary power plant technology which is able to use lower temperature geothermal to indirectly heat a fluid with a lower boiling point to run the plant's turbines. Once completed, the Raft River facility will have an electric-generating capacity of 13 Megawatts. A megawatt is enough energy to power about 300 homes. In addition to this single electrical-generating facility, Idaho also hosts 73 operating direct use facilities at over 40

[2] Farhar, Barbara C. and Heimeller, Donna M.; 2003, Opportunities for Near-Term Geothermal Development on Public Land in the Western United States, Technical Report, National Renewable Energy Laboratory, p.9

separate resource areas in the state.[3] This relatively limited geothermal development throughout the State has been attributed to years of low-cost hydroelectric power.

The Geothermal Task Force of Western Governor's Association estimated that Idaho has 855 MW of near-term economic potential resources (i.e. by 2015) and 1,670 Megawatts (MW) of long-term potential (by 2025). This report gives 305 MW at six identified sites and 550 MW at "other Idaho sites" that are not named in the report[4]. One of the six identified sites, Big Creek Hot Springs, is on the Salmon National Forest (located in or near an inventoried roadless area) and is projected to have a near term resource capacity of 10 megawatts. Other than the resource estimate for the single site in the Salmon NF, there is no overall estimate of geothermal resource capacity of Idaho's National Forests or its inventoried roadless areas.

In the late 1970's – early 1980's, there was interest in geothermal leasing in National Forest land in the Island Park area of the Targhee NF, at Vulcan Hot Springs in the Boise NF, and at Big Creek Hot Springs in the Salmon NF. Although some NFS lands in Idaho were leased for geothermal, the leases were never developed and eventually expired. Presently, there are no geothermal leases on NFS lands in Idaho. Higher energy prices and new legislative incentives contained in the 2005 Energy Policy Act have renewed interest in geothermal leasing. In August 2005, Ormat Nevada Incorporated (Ormat), an active company in the geothermal power industry, filed six geothermal lease applications for 11,130 acres in the Boise NF, which includes 6,976 acres of the Peace Rock IRA. Ormat also filed another three geothermal lease applications for 5,591 acres in the Salmon NF, which includes about 33 acres of the West Panther Creek IRA.

None of the Idaho National Forests have a current leasing decision for geothermal resources. The Bureau of Land Management (BLM) and Forest Service have initiated a national programmatic environmental impact statement (EIS) for geothermal development to assist in geothermal leasing and permitting on BLM public lands and National Forest lands. The draft programmatic EIS is tentatively scheduled for release in December 2007 (US Department of Energy, USDI BLM, USDA Forest Service 2005). When completed, the EIS will help the Forest Service decide about whether or not to allow BLM to lease lands with medium to high geothermal potential, including the lands contained in the Boise and the Salmon-Challis applications.

A regional geothermal resource assessment produced in February 2002 by the Southern Methodist University (SMU) Geothermal Heat Laboratory was used in this report to provide an indication of the geothermal resource potential of Idaho's inventoried roadless areas. The SMU report produced a qualitative composite of information on heat flow, thermal gradient, sediment thickness, and hot springs. Based on these

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[3] Fleischmann, Daniel J.; 2006, Geothermal Development Needs in Idaho, Geothermal Energy Association, 51 p.

[4] Geothermal Task Force of Western Governor's Association (WGA) – January 2006: http://www.westgov.org/wga/initiatives/cdeac/Geothermal-full.pdf (page 65)

variables, the assessment produced digital map coverage of broad areas of geothermal resources and rated these resources as having high, medium, or low development potential.[5] Figure 1 shows the extent of the high, medium, and low areas of geothermal potential in Idaho. The SMU map is a more optimistic projection of a number of available maps that portray Idaho's geothermal potential. A more conservative estimate of Idaho's geothermal potential can be found on the Idaho Department of Water Resources website at www.idahogeothermal.org Other geothermal potential maps that include Idaho can be viewed at www.eere.energy.gov/geothermal/geomap.html and www.smu.edu/geothermal/2004NAmap.htm. Although these maps are helpful in identifying where there is geothermal potential, there has not been any history of geothermal activities on NFS lands to predict specifically where, what kind, or how much actual geothermal development would occur within the specified potential areas.

Table 1 summarizes the acres of geothermal potential from the SMU report for both inventoried roadless areas and non-IRA Forest Service lands in Idaho.

Table 1. Acreage of geothermal resource potential on NFS lands in Idaho

Geothermal resource potential	High	Medium	Low	Total
Inside Idaho Roadless Areas	4,837,400	3,960,900	505,400	9,303,700
Outside Idaho Roadless Areas	5,370,800	5,389,200	1,436,300	12,196,300
Total NFS lands	10,208,200	9,350,100	1,941,700	21,500,000

[5] Farhar, Barbara C. and Heimeller, Donna M.; 2003, Opportunities for Near-Term Geothermal Development on Public Land in the Western United States, Technical Report, National Renewable Energy Laboratory, CD

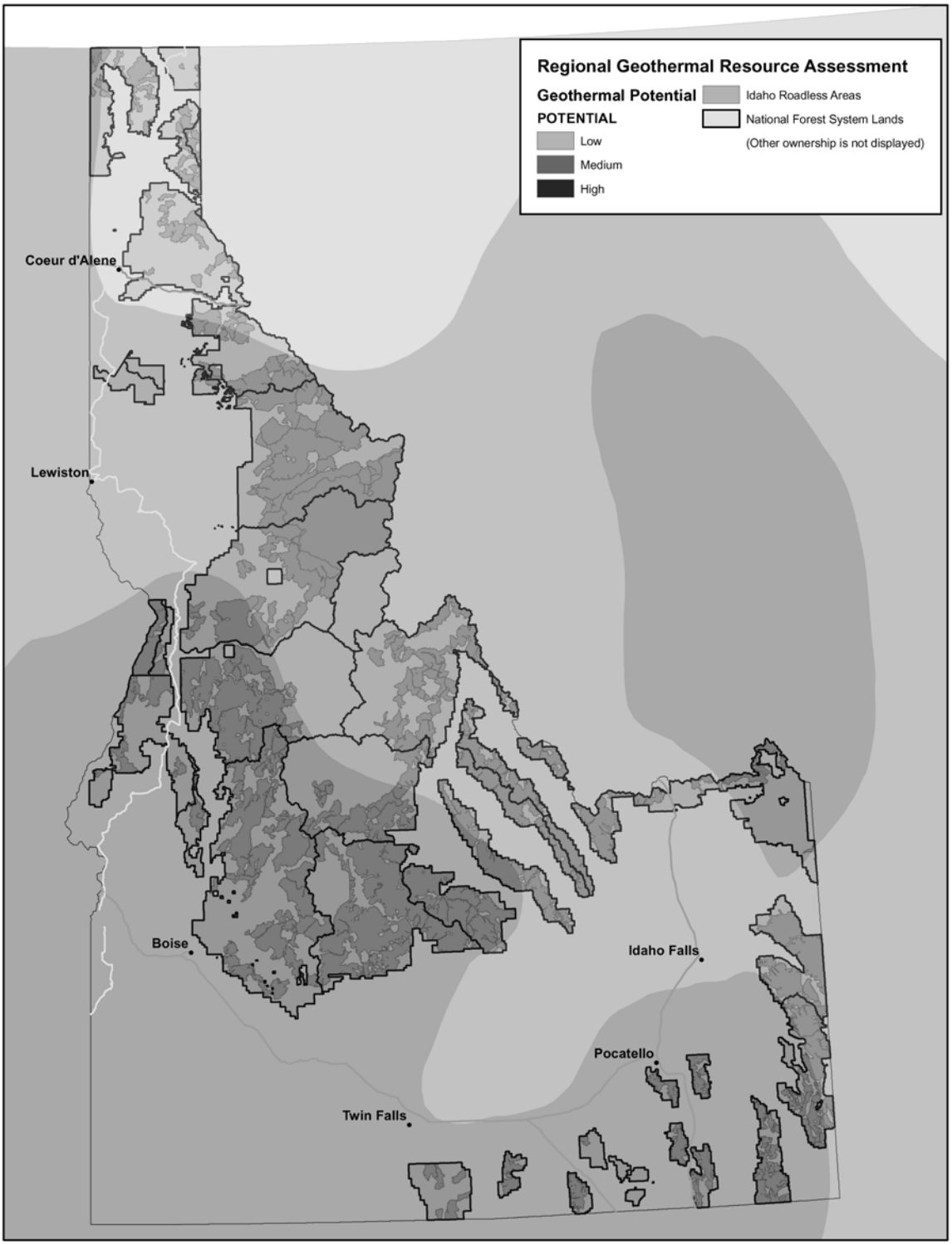

Figure 1. Overlap of Idaho Roadless Areas and geothermal potential

Given the substantial amount of acres that exists outside of IRA's (both Forest Service and non-Forest lands), it is assumed that for the foreseeable future, geothermal exploration and development activities will principally focus on the potential on these lands rather than trying to contend with surface resource issues and remoteness of inventoried roadless areas. However, with nearly 8.8 million acres of high and medium geothermal potential within roadless areas, it is reasonable to expect there will be some interest in leasing, exploration, and development of geothermal resources in inventoried roadless areas. The pending lease applications in the Boise and Salmon NF's support this expectation.

With a lack of lease or development history for geothermal on Forest Service lands in Idaho, there is no trend data to project the amount of geothermal exploration and development activities that might occur on inventoried roadless areas. Instead, the following discussion provides a general description of the activities, facilities, and surface disturbance that could be expected on a geothermal lease that would be developed for electrical generation. Because of the variety of other uses for which geothermal resources might be used, the surface impacts of potential direct uses are not discussed.

In the first stages of exploration, a lessee will drill a number of shallow temperature gradient wells to determine both the area-wide extent of the temperature differences and where the highest temperature gradient occurs. Temperature gradient wells can be drilled using a truck-mounted rig and can be up to 500 feet deep. Whenever possible, temperature gradient wells would be drilled using existing roads for access. When existing roads are not available, new access roads may need to be constructed for the truck-mounted rig to reach the drill site. Usually temperature gradient holes do not require a well pad, however preparing the site for drilling could include leveling the surface and clearing away vegetation. The shallow depth of the drill holes and the smaller drilling equipment requires much less surface disturbance than that associated with deep well drilling.

If results of temperature gradient wells are favorable, deep exploratory test well drilling would likely follow to determine with certainty the existence of a geothermal reservoir and its suitability for commercial development. Conventional oilfield drilling rigs, adapted for geothermal work, are used to drill deep wells. The size of the well pad needed to provide enough space for the drilling equipment varies with depth, but averages about 3 acres.

Roads would be needed to accommodate drilling and servicing of wells. Existing roads would be used wherever possible, but it is expected that some of the existing roads would be upgraded and that new, temporary and permanent access roads would be constructed. Temporary roads would average about 30 feet in width from the top of the road cut to the bottom of the road fill, while permanent roads would be about 50 feet wide.

If a geothermal resource is discovered, the well is tested to determine the characteristics of the reservoir. Further drilling would be anticipated to provide multiple wells for development and production. A typical 40-megawatt binary power plant would require 8 production wells and 4 injection wells.

Geothermal resource development could involve constructing the infrastructure needed to produce the geothermal reservoir. The type of development that occurs would be based on the size and temperature of the geothermal reservoir. Pipelines would be necessary to transport hot water or steam from wells to power plants or other facilities for use. The pipelines that carry the hot water or steam are usually 24 to 36 inches in diameter and are covered with insulation. When feasible, they would parallel the well site access roads and other existing roads. The pipelines are usually located above ground to allow for the large amount of expansion and contraction associated with hot water or steam. Each pipeline would be expected to require about a 30-foot wide right-of-way. The length of pipeline through which geothermal water or steam can be carried is limited by potential energy losses. Consequently, geothermal production wells are typically within 1-2 miles of the power plant.

The conversion of geothermal energy into electrical power is an adaptation of the basic power cycle used in fossil-fueled electrical generating plants. The geothermal steam drives the turbine-generator in the same way as would steam produced in a boiler fired by oil or coal. Three types of power plants that harness geothermal resources are dry steam plants, flash steam plants, and binary cycle plants. Based on the assumption that developers would use the latest technology, any future power plants in Idaho would probably be binary type. A typical binary power plant would occupy about 5 to 10 acres. Binary cycle power plants use water from the geothermal reservoir to heat another "working fluid." The working fluid is vaporized and used to turn the turbine-generator units. The geothermal water and the working fluid never come in contact with each other. Binary cycle power plants can operate with lower water temperature 107°C to 182° C (225°F to 360°F) and produce few air emissions (U. S. Bureau of Land Management 2002)[6].

Energy production from a geothermal facility could last up to 30 years or longer and involves the operation and maintenance of the geothermal field and includes new drill sites. The drilling of new production wells, if necessary, in order to sustain or enhance a geothermal field would involve drilling and impacts that are similar to those discussed above in the development phase.

Transmission lines are needed to transmit electricity from the powerplant to distribution lines. Each line would require an average of a 40-foot wide right-of-way.

After production ceases all wells are plugged and all disturbed areas are reclaimed in conformance with Forest Service and BLM standards. Reclamation includes removing

[6] U.S. Bureau of Land Management. 2002. *Environmental Assessment for Leasing of Geothermal Resources Managed by the Bureau of Land Management Carson City Field Office.*

all surface equipment and structures associated with power generation, re-grading the site to pre-disturbance contours, and replanting native vegetation.

Oil and Gas –Since 1903, about 145 wells have been drilled throughout Idaho exploring for oil and gas, but not one has yet yielded a commercial discovery. The 1970's and 1980's saw extensive interest in eight of Idaho's ten National Forests with nearly 7.8 million acres of NFS lands reportedly leased for oil and gas (BLM; LR2000 database).[7] Only the Boise and the Wallowa-Whitman National Forests avoided this period of leasing interest. With no commercial discovery of hydrocarbons, all of the oil and gas leases on NFS lands have expired and there are presently no active oil and gas leases on any National Forest in Idaho.

With a relatively sparse history of exploratory drilling and no commercial oil and gas production in the State, the extent of oil and gas resources on Idaho's National Forests and their associated inventoried roadless areas is largely unproven. Presently, the occurrence potential for oil and gas is unknown to low in all Idaho Forests with the exception of the Caribou-Targhee (C-T) National Forest and the Curlew National Grassland. BLM and Forest Service geologic reports prepared in connection with area leasing analyses, have identified the occurrence potential in some areas of these two NFS units as medium to high due to being located within two geologic areas favorable to the occurrence of hydrocarbons, the Eastern Great Basin province and the Wyoming Thrust Belt province. While the there is potential for *occurrence* of hydrocarbons on these NFS lands, the potential for *development* is much less certain. This is evident in a 2003 USGS assessment of undiscovered oil and gas resources within the Wyoming Thrust province. This assessment made an allocation of the potential for undiscovered oil and gas reserves for individual States within the assessment unit. Idaho, which made up 38.4 percent of the assessment unit area, was allocated none of the undiscovered oil resources, and only 1 percent of the undiscovered gas resources.[8] The USGS has completed a similar assessment for the Eastern Great Basin province, but the specific assessment unit results are not yet available online.

The Reasonable Foreseeable Development Scenario (RFDS) prepared for the Targhee NF oil and gas leasing analysis, projected that 10 exploratory wells would be drilled on the Forest over a 15 year period.(Horsburgh, 1992)[9] The Scenario assumed that each well would need an average of 6 miles of new road construction. It predicted seven wells would be drilled in the Palisades area; two wells on the west side of Teton Valley or south of Palisades Reservoir; and one well would be in the northern part of the Forest. The February 2000 Targhee NF oil/gas leasing decision made much of the Forest either unavailable for leasing or available for leasing, but with a No Surface Occupancy (NSO) lease stipulation. Because the NSO blocks are large, and sometimes adjacent to no-lease

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[7] Bureau of Land Management LR2000 Database; June 2007

[8] Kirschbaum, Mark A., Seventh Approximation – Data Form for Conventional Assessment Units, Wyoming Thrust Belt Province, U.S. Geological Survey; National Oil and Gas Assessment, September 2003 p.4 http://certmapper.cr.usgs.gov/data/noga00/prov36/tabular/c360101.pdf

[9] Horsburgh, Charles; 1992, Reasonable Foreseeable Development Scenario (p.21), Appendix A of the Final Environmental Impact Statement for the Targhee National Forest's Oil and Gas Leasing Analysis, February 2000

areas, any oil and gas leases that would be issued within the Targhee essentially cannot be developed because surface occupancy, required for drilling, is not allowed. In the seven plus years since the Targhee leasing decision, only one lease has been issued which terminated when the lessee failed to pay the required rental. Currently, there are no oil/gas leases in effect on the Targhee NF and no wells have been drilled since the leasing decision was made in 2000.

In 2005, 230,000 acres of land in the Caribou National Forest were nominated by industry for oil and gas leasing. Responding to this request, the Forest has initiated a leasing analysis for both the Forest and the Curlew National Grassland. The RFDS prepared for the analysis projects four exploratory wells will be drilled on the Caribou over the next 15 years. (Robison, 2007)[10] Three of the wells are projected to be on the Soda Springs and/or eastern part of the Montpelier Ranger District (RD) and the other on the Bear River Range (western) portion of the Montpelier RD. Similar to the Targhee scenario, each well is predicted to require six miles of new access road to be constructed.

Although the development scenarios for the Targhee and the Caribou provided overall number of wells and general areas where the new wells could be reasonably expected, they did not specify whether or not wells would be located within an inventoried roadless area.

Phosphate – The Caribou-Targhee National Forest contains significant deposits of economically recoverable phosphate that is used primarily in the production of fertilizers. Idaho phosphate production is a significant national resource, representing about 15 percent of total U.S. production in 2001. Revenues from phosphate-related activity in Caribou County, Idaho on Federal leases for fiscal year 2001 were almost $9.34 million with about 90 percent of that generated from the national forest (USDA Forest Service 2003).

The Targhee portion of the Caribou-Targhee NF currently has three active phosphate leases totaling 1,694 leased acres. Of the leased acreage in the Targhee, 1,094 acres are within the Mt. Jefferson roadless area. These leases were issued in the mid-1950's and some mining occurred shortly thereafter on the leased portions outside the adjacent roadless area. There has been no phosphate activity in the area for many years and none is expected in the foreseeable future.

The Caribou portion of the Caribou-Targhee National Forest currently has 49 active phosphate leases affecting 27,515 acres of NFS lands. Of these active leases, approximately 8,000 acres are within six inventoried roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek). Some of these leased lands have already been mined; however the exact amount is not available due to the lack of GIS information for previously mined areas. All of the leased lands within IRA's were issued prior to the effective date of the 2001 roadless rule It is a

[10] Robison, Steve, Reasonable Foreseeable Development Scenario for Oil and Gas Development for Caribou National Forest and Curlew National Grassland, May 2007

common occurrence for existing leases to be modified to prevent the bypass or waste of mineable phosphate reserves that become evident as mining advances. In addition, 13,440 acres of inventoried roadless areas are unleased and located within Known Phosphate Lease Areas (KPLA), a U.S. Geological Survey designation to identify lands known to contain phosphate deposits (fig. 2). Table 2 summarizes the acreage of KPLA's within inventoried roadless areas on the Caribou-Targhee NF. Known phosphate deposits generally exist on the edges of specific roadless areas, which would leave the core of the roadless areas intact should mining occur.

Table 2: Idaho Roadless Areas potentially affected by phosphate mining

Idaho Roadless Area	Acres under existing lease (leased acres w/in a KPLA)[1]	Percentage affected by existing leases	KPLA acres with potential to be leased[2]	Percentage affected by potential KPLA future leases	KPLA location
Dry Ridge	1,400 (1,300)	6	800	3	Eastern edge
Huckleberry Basin	3,200 (2,800)	16	1,400	7	Northwest edge
Meade Peak	500 (500)	1	2,500	6	Northeast edge
Sage Creek	2,700 (2,600)	21	1,700	13	Southern portion
Schmid Peak	40 (40)	<1	20	<1	Eastern edge
Stump Creek	160 (120)	<1	120	<1	Southern edge
Bald Mountain	0 (0)	0	1,400	8	Northeast edge
Bear Creek	0 (0)	0	5,100	5	Northeast edge
Poker Peak	0 (0)	0	400	2	Northeast edge
Mount Jefferson	1,100 (0)	2	0	0	
Totals	9,100 (7,400)		13,440		

[1] *Not all existing lease acres are within a KPLA (known phosphate lease area).*

[2] *Estimated acres do not include 1/2-mile buffer added to the Caribou's KPLAs to allow for additional facilities needed for exploration and/or mine operations if lease is approved.*

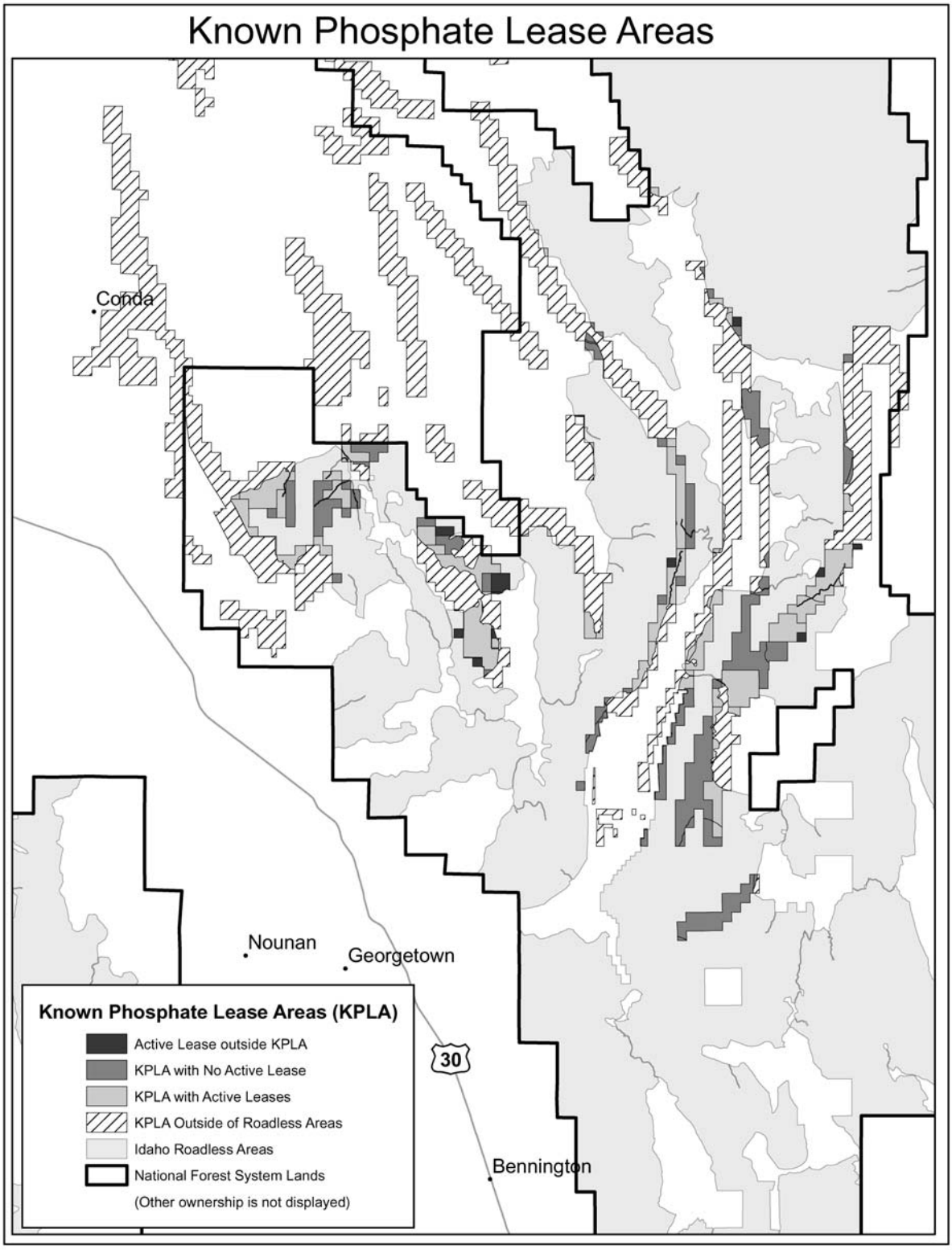

Figure 2. Overlap of Idaho Roadless Areas and existing phosphate leases and known unleased phosphate deposits.

Phosphate is currently being surface mined from two mines located on the Caribou portion of the forest, the Dry Valley Mine and the Smoky Canyon Mine. Operations at a third mine on the Caribou, the North Rasmussen Ridge mine, have been temporarily suspended, but are expected to resume within the next 3 years. A fourth mine, the Enoch Valley Mine is operating on a State lease within the administrative boundary of the Forest. The Dry Valley Mine and the North Rasmussen Ridge mine are not operating near roadless areas and will not be impacting roadless areas for the foreseeable future (J. Cundick 2007 pers. comm.). Although the Smoky Canyon Mine currently isn't impacting roadless areas, it is the only projected phosphate mine to operate within roadless areas over the next 15 years.

An EIS is in progress for a proposed expansion of the Smoky Canyon Mine (USDI BLM, USDA Forest Service, 2006 and 2007). The Smoky Canyon expansion proposes to mine about 2 million tons of phosphate ore per year from 2,080 acres of leased lands. The proposed mine plan would disturb 1,040 acres of surface in the Sage Creek Roadless Area and 60 acres in the Meade Peak Roadless Area. About 320 acres of the total surface disturbance within the roadless areas is proposed to occur on existing lease holdings or on proposed lease modifications.[11]

Over the 16-year life of the project, the Smoky Canyon Mine expansion would construct about 5 miles of main haul within the roadless areas, disturbing about 120 acres. With an operating width of 100 feet, main haul roads require an overall disturbance with of 100 to 500 feet, depending on terrain. In addition to the main haul road, 980 acres of disturbance would occur with the two affected roadless areas as the surface mine, soil and overburden storage piles, settling ponds, ditches, and power lines are developed.

As the surface mine advances, it follows the long, linear surface outcrop pattern of the phosphate deposits. Fully developed, the active pit area would be several hundred feet wide and 200–400 feet deep (fig. 3). The mining operation continues along the trend of the deposit, backfilling and reclaiming the pit as the ore is removed (fig. 4). The mine would be a 24-hours-per-day operation as the overburden and ore are drilled, blasted, loaded, and hauled using a shovel-and-truck fleet. All surface disturbances would be reclaimed after the project is completed with the exception of about 70 acres (steep pit walls and a section of road that would be left for future use). An average of about 70 acres of the roadless areas would be of disturbed per year (1,100 acres/16 years).

In addition to the Smokey Canyon Mine, there are about 3,700 acres of pending lease modifications, prospecting permits, and exploration license applications in the Caribou-Targhee National Forest. Given a history of phosphate deposits being leased outside of KPLA boundaries (table 16); it is assumed that the Caribou has additional roadless areas outside KPLAs with phosphate potential. Lands outside of KPLAs would need further exploration to determine their leasing potential.

[11] There are about 520 acres within the Sage Creek Roadless Area involved with the lease modification, but only 320 acres would have surface disturbance.

Figure 3– open pit

Figure 4 – reclaimed pit

Coal – In the early part of the twentieth century, coal was produced from lands in the Targhee Unit of the Caribou-Targhee National Forest (Robison 2007). Later, in the 1980's, there were coal lease applications also in the Targhee Unit of the Caribou-Targhee National Forest. These applications were eventually closed when the applicant failed to respond to information requests (BLM LR2000 database). There currently are no existing leases or pending lease applications for coal on National Forest System lands in Idaho. Consequently, no foreseeable activity is anticipated to explore for or develop coal resources on inventoried roadless areas and will not be discussed further in this report.

SALABLE MINERALS

Salable minerals are common varieties of sand, stone, gravel, soil, and clay. Generally, they are widespread and of low value, primarily used for construction or landscaping materials. Their value is dependent upon market factors, quality of the material, and availability of transportation. Disposal of these resources is at the sole discretion of the Forest Service and subject to the provisions of 36 CFR 228, Subpart C. Under these regulations, the Forest Service may either: 1) sell material for commercial use or for personal use by the public; 2) allow free use of material for public projects by other federal agencies or State and local governments; or 3) use material itself for agency projects on NFS lands. The regulations also require that disturbance associated with mineral material sites is approved by the Forest Service in an operating plan that includes provisions to protect the environment and timely reclaim the surface.

Statewide production of mineral materials in Idaho averaged 22.67 million tons per year for the three year period from 2002 through 2004. In comparison, the total tonnage of mineral material dispositions from Idaho's National Forests reported for the fiscal years 2003 through 2005 are shown in table 3:

Table 3: Mineral material dispositions from Idaho national forests, fiscal years 2003–2005

Fiscal year	Sales	Free use	Forest Service use
	----------*tons*----------		
2003	14,856	31,867	122,220
2004	65,612	80,713	137,784
2005	64,303	78,149	131,905
Average	48,257	63,576	130,636

Thus the total average annual production of mineral materials from NFS lands represents just over one percent of the total mineral material production for all of Idaho. Although a specific breakdown of amounts of mineral materials generated from IRA's is not available, an informal survey of minerals specialists in four National Forests with the largest reported mineral material tonnage, suggests that mineral material contributions from IRA's are generally small and only used for public road projects (free use) or local Forest Service use[12]. This lack of commercial interest is likely due to: IRA's being generally remote compared to where mineral materials are needed; the terrain is too rugged for developing such a low value commodity; and there is widespread availability of other mineral material sources outside of IRA's.

The amount of road construction or reconstruction associated with the small volume of mineral materials produced from roadless areas is included in the 1 mile per year estimate for all non-timber roads.

[12] Personal Communication with Jim Egnew, Geologist, Payette National Forest; Jim Curtis, Mining Engineer, Boise National Forest, Jeff Gabardi, Mining Engineer, Sawtooth National Forest; Dave Sabo, Minerals Administrator, Salmon National Forest; Dean Morgan, Geologist, Challis National Forest.

ABANDONED AND INACTIVE MINES

A total of 315 abandoned mines and associated facilities have been identified to date on 66 inventoried roadless areas in Idaho's National Forests. The Forest Service inventory of abandoned mines on National Forest System lands is an ongoing process and therefore the number of abandoned mine sites within inventoried roadless areas in Idaho may increase.

Abandoned mines, quarries, and other mineral sites that pose human health, environmental or safety risks may require some type of reclamation or mitigation. If they do exist and are releasing, or have the potential to release, a hazardous substance, they would require some type of response action under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (P.L. 96-510, Stat. 2767; 42 U.S.C. 9601, 9603, 9607, 9620) (CERCLA) (USDA Office of Inspector General 1996)[13]. This act addresses emergency response, site remediation and spill prevention. The Forest Service has authority for CERCLA enforcement on NFS lands under Executive Order 12580, sec. 2(j). An Engineering Evaluation/Cost Analysis (EE/CA) or remedial investigation/feasibility study (RI/FS) would include provisions for proposed road construction if needed for CERCLA response actions, consistent with the National Contingency Plan, 40 CFR Part 300.

Also, inventoried roadless areas may contain sites that require some type of reclamation to resolve violations of the Clean Water Act (USDA Office of Inspector General 1996).

It is common for abandoned mines to have existing road in place from when the mine was developed. Some road reconstruction may be needed to improve access to the mine itself to accomplish reclamation goals. However, these road improvements are only temporary as closing and reclaiming the mine roads is integral to achieving the overall reclamation goals of the abandoned mine land program.

GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

Paleontological resources are recognized as important both for their scientific and natural resource values and in terms of the active protection required in their management. Identification of fossil resource probability in an area and the appropriate management prescriptions is accomplished in the land management planning process. Management prescriptions are generally based upon scientific significance of a specimen and sensitivity ranking of a locality. Existing policies regulate the collection and disposition of vertebrate but usually not invertebrate or plant fossils.

Generally, NFS lands are available for collecting rocks and minerals, except on lands withdrawn to prohibit these activities.

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[13] USDA, Office of Inspector General, Southeast Region. 1996. Forest Service Management of Hazardous Material at Active and Abandoned Mines. Audit Report No. 08601-1-A. March. 46p.

Geologic processes such as landslides, earthquakes, or volcanic hazards affect peoples' lives. To enhance public understanding and appreciation of them, the Forest Service may develop interpretive sites to highlight examples of them.

Karst and cave resources occur on areas underlain by limestone or marble or areas having exposed basaltic flows. Some of the values associated with karst and cave resources are their ability to store and transmit groundwater, their importance as subterranean wildlife habitats, their importance as cultural resource or paleontological sites, and their ability to provide interpretive sites or recreational opportunities for spelunkers or cavers. They can also present hazards, such as sinkholes, to resource use and development.

Energy Corridors

Recognizing the fundamental importance of the delivery of energy supplies to the nation's economic well-being, Congress passed Section 368 of the Energy Policy Act of 2005 to require certain federal agencies (Agencies) to designate energy corridors on federal lands in 11 western states, which includes Idaho, and to coordinate with each other to create a cooperative, efficient process for applicants to apply for rights-of-way in such corridors. Congress stated in Section 368 that the Agencies should incorporate the designated corridors into their respective land use or resource management plans. Congress also directed the Agencies to conduct environmental reviews that are required to designate corridors and add the designated corridors to the plans.

To carry out this legislative direction, the Forest Service is participating in preparing a programmatic environmental impact statement (PEIS) to designate energy corridors on land it administers for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities in 11 contiguous western states and to incorporate these designations into affected Agency land use plans. (U.S. Department of Energy, USDI BLM, USDA Forest Service 2005).

None of the Idaho corridors being addressed in the PEIS impact inventoried roadless areas.

Results

Effects Common to All Alternatives

Locatable Minerals

Construction or reconstruction of roads for locatable mineral exploration or development is part of the reasonable right of access provided under the General Mining Laws. Therefore, none of the three alternatives will affect this statutory right of reasonable access to prospect and explore lands open to mineral entry and develop valid claims.

All proposals for locatable mineral exploration or development would be subject to the planning and design requirements governing locatable minerals in 36 CFR 228, Subpart A. If proposed activities will cause significant disturbance to NFS surface resources, a Plan of Operations would be required of the mining operator, and the appropriate level of analysis of environmental effects would be conducted under NEPA. An EIS would likely be required for proposed activities that would substantially alter the undeveloped character of an inventoried roadless area of 5,000 acres or more. Otherwise, proposed activities that will affect inventoried roadless areas would be considered extraordinary circumstances [FSH 1909.15,30.3(2)(d)], and would require at least the preparation of an environmental assessment. The plan of operations would be approved subject to modifications identified in the environmental analysis and would be binding on the operator.

Under all alternatives, an estimated average of 1 mile or less per year of road construction or reconstruction is projected to occur in Idaho Roadless Areas during the next 15 years for all non-timber related activities, including mineral activities, such as access to locatable minerals and exploration within existing lease areas.

Leasable Minerals

Phosphate—None of the alternatives would prohibit road construction or reconstruction associated with developing the existing leases on the Caribou-Targhee National Forest or the continuation, extension, or renewal of these leases. All of the existing phosphate leases within roadless areas in the State were issued before January 12, 2001, the effective date of the RACR. Roads may be developed both on and off of these leases when they are reasonable and necessary for access and development, including associated product conveyance lines.

Consequently, the reasonably foreseeable road construction and mining disturbance associated with developing existing leases at the proposed Smoky Canyon mine expansion is expected to occur within under each of the alternatives. This activity would result in 1,100 acres of disturbance to the Sage Creek and Mead Peak roadless areas over the next 15 years.

Projecting beyond the Smoky Canyon mine expansion, it is likely that the remaining phosphate resources currently under lease, roughly 8,000 acres, within seven inventoried roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) will also be mined. Using the Smoky Canyon expansion as an example of the level of expected activity, an estimated 17.4 miles of haul road construction and other surface mining disturbance would ultimately take place within IRA's. This disturbance of course would spread out over an extremely long period of time (50 or more years) as mines are eventually permitted and developed.

Geological and Paleontological Resources

The geologic and paleontological resources described in the Affected Environment section of this document are not predicted to result in any new road construction or reconstruction in inventoried roadless areas. Accordingly, no effects under the Proposed Action or any alternative are expected.

EFFECTS THAT VARY BY ALTERNATIVE

Alternative 1 – The 2001 Roadless Rule

Leasable Minerals

The 2001 Roadless Rule did not prohibit mineral leasing in inventoried roadless areas, but did prohibit the construction or reconstruction of roads associated with leases issued after January 12, 2001, the date the rule was published. Proposals for exploration or development of leasable minerals using existing roads or not requiring use of roads were still allowed within inventoried roadless areas under the 2001 Roadless Rule. Prohibition of road construction or reconstruction in inventoried roadless areas would factor into the analysis of lands available for lease when leasing decisions are made.

Although leasing isn't prohibited under the 2001 Roadless Rule, the prohibition of road construction or reconstruction severely limits the opportunity for operators to explore and develop leasable mineral resources that may exist in inventoried roadless areas. This is because the density and location of existing roads is usually not adequate for that purpose. There would be very little, if any, commercial interest in leasing minerals subject to these kinds of restrictions. With no interest in leasing, the mineral resources would not be developed.

Geothermal-- There are no existing geothermal leases on Idaho roadless areas. Therefore, there would be no new roads developed under the specific exemption in the 2001 Roadless Rule for that purpose. Any new leases issued would be subject to the 2001 Roadless Rule road prohibitions. Assuming the density of existing roads within roadless areas is not adequate to explore and develop geothermal resources, it is expected there would be no commercial interest in geothermal leasing. This expectation is based on the reaction of Utah oil and gas lessees, who requested a suspension of their leases upon learning that their leases were subject to the roadless rule provisions, claiming they were prevented from operating on their leases.

Exploration methods used for geothermal are similar to those used for oil and gas. Consequently, no development of geothermal resource potential is expected on the 9.3 million acres of Idaho roadless areas. About 10.6 million acres of NFS lands outside Idaho Roadless Areas with high to moderate geothermal potential may be available for exploration and development, depending on the existing plan direction (table 1). The impact on the recovery of geothermal resources cannot be quantified because there is no specific resource estimate from which to draw.

Oil and Gas – The Caribou-Targhee NF is the only forest with potential for oil and gas activity in the foreseeable future (next 15 years). There are no existing oil and gas leases in Idaho Roadless Areas, hence there would be no roads constructed or reconstucted to access existing lease rights. The Targhee portion of the Caribou-Targhee National Forest issued a decision in 2000 that either precludes development or places a NSO stipulation on the roadless areas on the Targhee; therefore, the 2001 Roadless Rule would have no effect on the oil and gas leasing decision already in place on the Targhee.

The 2001 Roadless Rule could preclude oil and gas development in roadless areas on the Caribou portion of the Caribou-Targhee National Forest. It is expected there would be no commercial interest in oil and gas leasing in roadless areas because the 2001 Roadless Rule prohibits road construction/reconstruction to access new leases. This expectation is based on recent action taken by oil and gas lessees in Utah's Uinta National Forest. Upon learning that their leases would be subject to the reinstated 2001 Roadless Rule, these lessees requested that BLM suspend their leases, asserting that they were "prevented from operating on the leases."

If the four exploratory wells projected in the draft reasonably foreseeable development scenario require new road construction or reconstruction, they would have to be located outside roadless areas. However, based on the U.S. Geological Survey's assessment that there is low potential for undiscovered resources in southeast Idaho, the impacts on oil and gas resource recovery would be minimal.

Phosphate— Under the 2001 Roadless Rule road construction and reconstruction would be prohibited on the 13,400 acres of unleased Known Phosphate Lease Areas (KPLA) that are within inventoried roadless areas on the Caribou-Targhee National Forest. This assumes BLM would issue any new leases with a stipulation that would subject the lease to the 2001 Roadless Rule road prohibitions; therefore it is expected there would be no commercial interest in new phosphate leasing within roadless areas. Accordingly the phosphate reserves on this acreage would not be mined because roads could not be built to support advance drilling needed to specifically define the mineable deposit.

Although mining on these lands is not expected to occur in the foreseeable future, this alternative would have the long term impact of foregoing the recovery of an estimated 603 million tons of phosphate resource. This is a rough estimate assuming an average of 45,000 tons of recoverable phosphate ore from each acre mined and applying this average to the entire 13,400 unleased acres. This recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

In addition to unleased lands within KPLA's, undiscovered phosphate resources that may exist within other potions of Idaho Roadless Areas but are outside of KPLA's, would not be adequately explored to determine if economic reserves exist. No estimate of recoverable phosphate is made for inventoried roadless areas outside of KPLA's because the extent of the resource is not known for these areas.

Saleable Minerals

The 2001 Roadless Rule prohibits road construction or reconstruction associated with developing new mineral material sites within inventoried roadless areas.

It is possible that new mineral material sites or expansion of existing sites could occur within inventoried roadless areas to provide material for new road construction or reconstruction associated with any of the exceptions under the 2001 RACR or for use on other Forest Service projects. Such mineral material sites would have to be developed along an existing road or adjacent to a road being built under one of the exceptions to the rule. This is expected to be a rare circumstance.

Because there has historically been little interest in the use of mineral materials from Idaho Roadless Areas, except for relatively small volumes for Forest Service projects, the the effects on the production of this resource under the 2001 Roadless Rule should be minimal.

Abandoned and Inactive Mines

One of the exceptions under the 2001 Roadless Rule provides for the construction or reconstruction of roads needed to conduct a response action under CERCLA or to conduct a natural resource restoration action under CERCLA, Oil, and Hazardous Substance Liability – Sec. 311 of the Clean Water Act, or the Oil Pollution Act.

Therefore, under this alternative, the Forest Service will continue to respond to CERCLA violations that may be encountered at the 315 abandoned mines, quarries, and other mineral sites that have been currently identified within 66 roadless areas in Idaho as well as at any sites identified in the future. Construction or reconstruction of any necessary temporary roads for this activity would be permissible. The exact number of these identified sites that may result in CERCLA violations is not known until site specific assessments are completed.

Alternative 2 – Existing Plans

Leasable Minerals

Under this alternative, management of leasable mineral resources in Idaho roadless areas would be guided by each forest's land and resource management plan. If one doesn't already exist, environmental impact statements are usually prepared on a forest-wide basis to address leasing decisions. Areas with management prescriptions to protect roadless area values either may not be leased, may be leased with a no-surface occupancy stipulation, or may generate a forest plan amendment. Areas with management prescriptions that allow road construction or reconstruction may be leased subject to standard lease terms and any other supplemental stipulations deemed appropriate and necessary by the Forest Service.

Geothermal— Without any trend data for geothermal exploration and development activities on National Forest System lands in Idaho, it is too speculative to predict the

amount of new road construction/reconstruction that would occur in Idaho Roadless Areas under Existing Plans. Some level of exploration and development may occur if road construction or reconstruction is not prohibited under a specific forest plan prescription and if surface occupancy is allowed. Table 4 provides a summary of Idaho roadless area acreage by geothermal resource potential and forest plan prescriptions grouped into equivalent State management themes. The impact to the recovery of geothermal resources cannot be quantified for any of the themes discussed here because there is no specific resource estimate to draw from.

Table 4: Acres of Idaho Roadless Areas by Existing Plan theme equivalent and geothermal resource potential

Existing Plan theme equivalent	Acres of geothermal resource potential			
	High	Medium	Low	Total
Wild Land Recreation	824,000	460,900	35,900	1,320,800
Primitive	1,507,700	454,800	169,300	2,131,800
Backcountry	1,932,600	2,116,600	195,900	4,245,100
GFRG	387,300	796,600	77,800	1,261,700
Forest plan special areas	185,800	132,500	26,500	344,800
	4,837,400	3,961,400	505,400	9,304,200

None of the Forests in Idaho have a current leasing decision for geothermal, which would need to be completed for lands could be offered. Leasing decisions would take into account roads standards for respective forest plan prescriptions and identify other required lease stipulations to protect surface resources. One such stipulation would likely be no surface occupancy on slopes steeper than 40%. Table 5 shows the IRA acreage where surface occupancy or roadbuilding would be allowed because slopes are less than 40%. About 50 percent of Idaho Roadless Areas are less than 40 percent slope.

Table 5. Acres of Idaho Roadless Areas by Existing Plan theme equivalent and geothermal resource potential with slopes less than 40 percent 1

Existing Plan theme equivalent	Acres of geothermal resource potential with slopes less than 40 percent			
	High	Medium	Low	Total
Wild Land Recreation	304,700	204,000	15,100	523,800
Primitive	692,500	205,000	64,700	962,200
Backcountry	1,095,500	1,050,600	87,400	2,233,500
GFRG	249,500	457,700	30,500	737,700
Forest plan special areas	90,900	61,900	12,200	165,000
	2,433,100	1,979,200	209,900	4,622,200

[1]Based on overlay of the SMU map with the Existing Plan themes

Geothermal resources under the forest plan management prescriptions similar to Wild Land Recreation, Primitive, and forest plan special areas are not expected to be developed because of prohibitions on road construction or reconstruction. This expectation is based on the experience with certain oil and gas lessees in Utah who

believe they cannot develop a lease without the ability to construct new roads. The methods used to explore for geothermal are similar to those used in oil and gas. Furthermore, the density of existing roads is probably not adequate to explore and develop the geothermal resource in these areas. It is also likely that in large portions of these areas, surface occupancy would not be allowed to avoid steep slopes and to protect other sensitive surface resources, further supporting the prediction that no development would occur. These areas constitute about 40 percent of Idaho Roadless Areas.

Under the forest plan management prescriptions similar to the Backcountry theme, road construction or reconstruction would be permissible only under limited circumstances on some of the lands and precluded completely on other portions. Some forest plans—such as the Boise, Payette, and Sawtooth—preclude road construction or reconstruction for new leases (see appendix B). On those lands where new or reconstructed roads are precluded, there would not likely be any geothermal leasing or associated activities. Given that road construction or reconstruction could occur in at least some of the Backcountry lands, there is potential that some level of geothermal activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). The Backcountry theme contains a substantial amount (46 percent) of the roadless areas with geothermal potential, with the majority being high and medium potential. About 24 percent of Idaho Roadless Areas in the Backcountry theme have slopes less than 40 percent and could have some potential for development (table 5), provided road construction or reconstruction is permitted.

Management prescriptions in Existing Plans similar to the GFRG theme would permit road construction or reconstruction to access mineral leases. The amount of activity would be relative to the amount of land available. GFRG lands constitute 16 percent of the total roadless areas in the State. About 8 percent of Idaho Roadless Areas in GFRG have slopes less than 40 percent (table 5). These lands have potential to host some level of geothermal activities because of the open access. Any future exploration or development would undergo separate environmental analysis. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see Affected Environment Section for a description of general development of geothermal resources).

Currently lease applications have been submitted for geothermal development, which could affect 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Lands in the Peace Rock Roadless Area are in management prescriptions similar to Backcountry, and lands in the West Panther Roadless Area are in management prescriptions similar to GFRG. These areas could be made available for leasing depending on the outcome of the pending leasing decision; development as described in the Affected Environment section could then occur.

Oil and Gas— The Caribou-Targhee National Forest is the only forest with potential for oil and gas activity in the foreseeable future (next 15 years). The Targhee portion of the forest issued a decision in 2000 that either precludes leasing or places a NSO stipulation on the roadless areas on the Targhee. Without either a lease or the ability to occupy the surface, no oil and gas wells are expected to be constructed within roadless areas on the Targhee.

The Caribou portion of the forest is conducting an analysis to decide which NFS lands would be made available for leasing and under what terms and conditions (USDA Forest Service, USDI BLM 2006) . Under the Existing Plan management prescriptions, road construction is permissible on approximately 89,000 acres of the 741,700 acres in roadless areas. It is expected there would be no commercial interest in leasing the remainder of the Caribou's roadless areas because experience elsewhere has shown that the industry generally believes leases cannot be developed without the ability to construct roads. Therefore, any exploratory wells would be located within the 450,200 acres of lands outside roadless areas and in roadless areas where road construction is permitted. With the low potential for recoverable oil and gas reserves in southeast Idaho, the availability of only a small portion of roadless areas for road construction/reconstruction should have minimal impact on the recovery of oil and gas resources, even though it would significantly inhibit the ability of industry to explore the forest's oil and gas potential.

Phosphate-- The existing Caribou Forest Plan, covering the Caribou portion of the Caribou-Targhee National Forest, allows for leasing of the estimated 6,500 acres of unleased known phosphate lease areas (KPLAs) and/or other possible roadless areas that contain undiscovered phosphate resources. Unleased KPLAs in the forest plan have a dual management prescription. In addition to the variety of prescriptions that apply to the unleased KPLAs, the forest plan recognizes these lands as having potential to be leased for phosphate exploration and possible mining. If leases are issued, the lands are then managed under the prescription for active phosphate mines. The prescription includes a half-mile buffer around the KPLA to accommodate support facilities or developments, including lease modifications that could be needed for mine activities. If phosphate leases are approved, they would be allowed reasonable access when future exploration drilling and mining is permitted. Reasonable access in these instances could include road construction or reconstruction within additional areas outside of the half-mile buffer around KPLAs. Using the Smoky Canyon expansion as an example of the level of expected activity, roughly 70 percent of the total amount of haul road construction necessary for a given mining project would ultimately take place within the half-mile buffer round KPLAs and in roadless areas.

The 6,900 acres of unleased KPLA in the Targhee portion of the Caribou-Targhee National Forest would have to undergo a separate NEPA analysis in order to determine how much of the 6,900 acres of KPLA could actually be leased.

There is expected to be little or no demand for unleased KPLA acreage within roadless areas for the foreseeable future because of the amount of reserves the industry already has under lease. However, in the long term (50 or more years) it is reasonable to assume that all 13,400 acres of unleased KPLA within Idaho Roadless Areas contain mineable reserves and would eventually be leased. If this should occur, roads, pits, and other surface mining facilities would be expected to be constructed within these roadless areas. This disturbance would spread out over an extremely long period of time (50 or more years) as mines are developed. If the unleased KPLAs are leased, there would be a potential to incrementally affect the total roadless area acreage of the Caribou-Targhee forest by less than 1 percent.

Saleable Minerals

About 1.262 million acres, or 14 percent of the total Idaho Roadless Areas, are within management prescriptions similar to the GFRG theme. These GFRG prescriptions permit road construction or reconstruction to develop or expand mineral material sites. Under most other Existing Plan prescriptions equivalent to the Wild Land Recreation, Primitive and Backcountry themes, road construction or reconstruction for mineral material purposes could occur only under very limited circumstances.

Even with the access permitted under the GFRG theme, the remoteness of roadless areas and the widespread availability of mineral material sources outside of roadless areas, create a reasonable expectation that only a minimal volume of mineral materials would come from Idaho Roadless Areas. Assuming the demand for mineral materials remains at current levels, this trend should continue; low volumes of mineral materials would be produced from roadless areas, the principal uses being for Forest Service projects or for the limited instances when roads are constructed within roadless areas. The effects on saleable mineral production under this alternative would be minimal.

Abandoned and Inactive Mines

Under Existing Plans, the Forest Service would continue to respond to CERCLA violations at abandoned mines, quarries, and other mineral sites that are located within roadless areas where road construction or reconstruction is permissible (table 6). A forest plan could be amended to permit road construction/reconstruction if road access is necessary to respond to CERCLA violations in areas with management prescriptions that prohibit new roads. Table 6 reflects abandoned mines and facilities that have been identified within inventoried roadless areas, broken down by their location within equivalent forest plan prescriptions.

Table 6: Number of abandoned mine/facility sites by under the Existing Plan by theme

Theme	Existing plans no. of mine/facility sites
Wild Land Recreation	18
Primitive	53
Backcountry	181
GFRG	55
SAHTS	0
Forest plan special areas	8
Total	315

Alternative 3: Idaho Roadless Rule (Proposed Action)

Leasable Minerals

Under the Idaho Roadless Rule, the Forest Service would not recommend, authorize, or consent to road construction/reconstruction for new mineral or energy leases in Idaho Roadless Areas managed under the Wild Land Recreation, Primitive, and SAHTS themes. These areas constitute 3,103,500 acres, or 33 percent of the total roadless area acreage in the State. The Idaho Roadless Rule would also not recommend, authorize or consent to authorize surface occupancy in the Wild Land Recreation, Primitive, and SAHTS themes.

The Idaho Roadless Rule also would prohibit road construction/reconstruction in the Backcountry theme, except as associated with phosphate leasing. Surface occupancy without road construction/reconstruction would be permissible for all mineral leasing. The rule would permit both surface occupancy and road construction/reconstruction for phosphate resources in the Backcountry theme.

The GFRG theme would permit both surface occupancy and road construction or reconstruction for all leasble mineral activities.

Geothermal— Table 7 identifies the acres of Idaho Roadless Areas allocated by resource potential and Idaho Roadless Rule theme. Geothermal resources under the Wild Land Recreation, Primitive, and SAHTS themes, as well as forest plan special areas, would not be developed because no surface occupancy and no new roads are permitted.

The Idaho Roadless Rule would permit surface occupancy within the Backcountry theme but prohibits road construction or reconstruction for geothermal resources. Despite the ability to occupy the surface, it is expected there would be no commercial interest in leasing lands under this theme because of the road prohibition, for reasons similar to oil and gas. Thus, 93 percent of the Idaho Roadless Areas would not experience any activity to develop geothermal resources. NSO means a lessee could not construct surface locations for wells on any leases issued. Directional drilling could be used to explore portions of NSO leases adjacent to areas where surface occupancy may be permissible. However, the large expanse of the involved roadless areas renders them virtually impossible to economically explore and develop entirely via directional

drilling methods. It is not expected that the industry would incur the extra expense of any directional drilling without the promise of the full economic enjoyment of the entire lease area. This is particularly true in relatively unexplored areas such as Idaho's roadless areas, where complex geology and lack of known commercial production greatly increase the financial risk of drilling.

Table 7: Acres of Idaho Roadless Areas by Idaho Roadless Rule theme and geothermal resource potential

Idaho Roadless Rule theme	Acres of geothermal resource potential			
	High	Medium	Low	Total
Wild Land Recreation	859,500	476,400	42,900	1,378,800
Primitive	1,376,000	269,800	10,700	1,656,500
Backcountry	2,064,500	2,777,600	404,700	5,246,800
GFRG	351,600	236,500	20,400	608,500
SAHTS[1]	0	68,700		68,700
Forest plan special areas	185,800	132,600	26,500	344,900
	4,837,400	3,961,600	505,200	9,304,200

Table 8: Acres of Idaho Roadless Areas by Idaho Roadless Rule theme and geothermal resource potential with slopes less than 40 percent

Idaho Roadless Rule theme	Acres of geothermal resource potential with slopes less than 40 percent			
	High	Medium	Low	Total
Wild Land Recreation	318,100	218,800	15,800	552,700
Primitive	619,900	138,100	4,800	762,800
Backcountry	1,170,700	1,378,100	168,400	2,717,200
GFRG	233,600	140,800	8,500	382,900
SAHTS	0	41,600	0	41,600
Forest plan special areas	90,900	61,900	12,200	165,000
Total	2,433,200	1,979,300	209,700	4,622,200

Under the Idaho Roadless Rule, only in the GFRG theme would geothermal activity be permitted to occupy the surface and to construct or reconstruct roads. GFRG lands constitute 7 percent of Idaho Roadless Areas, with the majority having high to medium resource potential. As discussed earlier, the Forest Service would perform a leasing analysis prior to leasing geothermal resources. One specific lease stipulation that is commonly required to be made a part of any issued leases is that no surface occupancy be allowed on slopes that are 40 percent or greater. As shown in table 8, about 63 percent of Idaho Roadless Areas in the GFRG theme have slopes that are less than 40 percent and could be developed for geothermal. Given the aforementioned characteristics, it is reasonable to expect that lands in the GFRG theme would experience some level of road construction or reconstruction to support geothermal activities sometime in the future.

Currently lease applications have been submitted for geothermal development including 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and

33 acres of the West Panther Roadless Area on the Salmon National Forest. Lands in both roadless areas are in the Backcountry theme under the Idaho Roadless Rule. Geothermal resources are unlikely to be developed in these areas because the rule would permit surface occupancy but prohibits road construction and reconstruction to access the geothermal resource. Experience elsewhere with oil and gas leases, which use similar exploration methods, suggest that operators believe they cannot develop leases without the ability to build roads.

Oil and Gas— The Caribou-Targhee National Forest is the only forest, in Idaho with potential for oil and gas activity in the foreseeable future (next 15 years). The Targhee portion of the forest issued a decision in 2000 that either precludes leasing or places a NSO stipulation on any leases issued within the roadless areas on the Targhee. Without a lease, industry would have no authority to locate upon or drill wells to explore for oil and gas. An NSO stipulation means a lessee could not construct surface locations for wells on the lease. Without either a lease or the ability to occupy the surface, no oil and gas wells could be constructed within roadless areas on the Targhee. Directional drilling could be used to explore portions of NSO leases adjacent to areas where surface occupancy may be permitted. However, the large expanse of the Targhee's NSO areas renders them virtually impossible to economically explore and develop entirely via directional drilling methods. It is not expected that the industry would incur the extra expense of any directional drilling without the promise of the full economic enjoyment of the entire lease area. This is particularly true in relatively unexplored areas such as Idaho's roadless areas, where complex geology and no known commercial production greatly increase the financial risk of drilling.

The Idaho Roadless Rule prohibits surface occupancy and road construction or reconstruction for oil and gas within the Wild Land Recreation (42,100 acres) or Primitive theme (44,400 acres) found on the Caribou portion of the Caribou-Targhee National Forest[14]. Similar to the previous discussion regarding the impact of the Targhee leasing decision, these prohibitions would preclude exploration and development of oil and gas resources in these areas because the large expanse of these areas would make it virtually impossible to develop the resource without occupying the site.

The Idaho Roadless Rule would permit surface occupancy within the Backcountry theme but prohibits road construction or reconstruction for oil and gas resources (371,700 acres). Despite the ability to occupy the surface, it is expected there would be no commercial interest in leasing lands under this theme because of the road prohibition. This expectation is based on the recent experience with certain oil and gas lessees in Utah who requested BLM to suspend the terms of their leases in roadless

[14] Oil and gas surface occupancy and road construction/reconstruction are also prohibited in the SAHTS theme; however, this theme does not apply to roadless areas on the Caribou portion of the Caribou-Targhee National Forest.

areas because they stated they could not develop the leases without the ability to construct new roads.

The Idaho Roadless Rule would permit surface occupancy and road construction or reconstruction for oil and gas exploration and development within roadless areas managed under the GFRG theme (251,800 acres). All but two of the roadless areas on the Caribou portion of the Caribou-Targhee National Forest have some GFRG acreage which should provide opportunities to locate exploratory wells to test the resource potential of the Caribou portion of the forest. Oil and gas exploration would likely occur on lands in GFRG within roadless areas, or the 450,200 acres of non-roadless lands. Despite the fact that only 33 percent of the roadless areas in the Caribou portion of the forest would likely experience any oil and gas activity, the impact on recovery of oil and gas resources under the Idaho Roadless Rule is expected to be low because of the low potential for recoverable oil and gas reserves in southeast Idaho.

Phosphate— There are 13,400 acres of known unleased KPLA on the Caribou-Targhee National Forest (see table 9). About 12,100 acres (90 percent) of this total would be managed under the Idaho Roadless Rule Backcountry and GFRG themes. Under these themes, road construction or reconstruction would be permissible to develop phosphate resources. Consequently, any unleased phosphate deposits could be leased to provide for the mining of phosphate reserves. If fully developed, roughly 545 million tons of phosphate could potentially be recovered[15]. About 1,300 acres of known unleased deposits located in the Primitive theme would not likely be leased and developed because of the road prohibitions.

Table 9: Unleased KPLA acreage by theme under the Idaho Roadless Rule

Theme	Acres of Unleased KPLA
Wild Land Recreation	0
Primitive	1,283
Backcountry	6,389
GFRG	6,209
SAHTS	0
Forest plan special areas	9
Total	13,890

There would be no near-term impacts on the recovery of phosphate resources under the Idaho Roadless Rule because the foreseeable development would occur in the Backcountry and GFRG themes, which are not subject to the road construction/reconstruction prohibitions. The longer term impact could be the potential loss of recoverable phosphate from the 1,300 acres of presently known unleased

[15] Recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

phosphate areas (59 million tons estimated[16]) and any yet undiscovered phosphate within themes with road prohibitions.

Salable Minerals

The sale of common variety mineral material sales would be prohibited within Wild Land Recreation, Primitive, and SAHTS themes after the effective date of the Idaho Roadless Rule. The rule would permit the Forest Service to use mineral materials within these three areas to carry out various Forest Service programs involving construction and maintenance of physical improvements, provided no road construction is needed to access.

Road construction/reconstruction associated with developing new mineral material sites would also be prohibited in the Backcountry theme. Sale of mineral materials would still be allowed under this theme when it is from an existing site or incidental to an activity allowed. A new mineral material site would have to be developed along an existing road or adjacent to a road being built under one of the exceptions to the rule. This is expected to be a rare circumstance.

Under the GFRG theme, road construction and reconstruction would be allowed to develop mineral material sites for all types of dispositions (that is, sales, free use, and administrative use).

Even with the access permitted under the GFRG theme and the limited exception under the Backcountry theme, the remoteness of roadless areas and the widespread availability of mineral material sources outside of roadless areas, create a reasonable expectation that only a minimal volume of mineral materials would come from Idaho Roadless Areas. Assuming the demand for mineral materials remains at current levels, this trend should continue; low volumes of mineral materials would be produced from roadless areas, with the principal uses being for Forest Service projects or for the limited instances when roads are constructed within roadless areas. The effects on saleable mineral production under this alternative would be minimal.

Abandoned and Inactive Mines

The Idaho Roadless Rule includes an exception that would permit road construction or reconstruction in all themes when provided by statute or treaty or pursuant to reserved or outstanding rights or other legal duty of the United States. Under this exemption roads could be constructed or reconstructed to respond to CERCLA violations. Therefore, under this alternative, the Forest Service would continue to respond to CERCLA violations that may be encountered at the 315 abandoned mines, quarries, and other mineral sites that have been currently identified within 66 of Idaho Roadless Areas (table 10).

[16] Recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

Table 10: Number of abandoned mine/facility sites by theme under the Idaho Roadless Rule

Theme	Idaho Roadless Rule no. of mine/facility sites
Wild Land Recreation	22
Primitive	33
Backcountry	247
GFRG	5
SAHTS	0
Forest plan special areas	8
Total	315

Cumulative Effects

All three of the alternatives would limit leasable mineral and salable mineral exploration and development opportunities to varying degrees in Idaho's inventoried roadless areas. While limiting this activity would have a positive cumulative effect to the natural environment of roadless areas, it could have a negative cumulative effect to the local and national socio-economic environment by: 1) foregoing the investment in developing the energy and mineral resources; foregoing the societal benefits of energy and mineral production; and reducing revenues or production royalties to Federal, State, and local governments. Reducing the potential for leasable mineral development could contribute to a greater reliance on some mineral resources from abroad where foreign political and economic influences would factor into their price and availability.

In the case of geothermal resources, there could also be a negative impact to the natural environment if a fossil fuel energy source and its associated greenhouse gases are used in lieu of geothermal power or heat.

The extent of these cumulative impacts under each alternative would be dependent on the amount of roadless areas with a prohibition on road construction or reconstruction and to the mineral potential of the areas with road restrictions.

CONCLUSIONS

Under all alternatives considered, road construction or reconstruction would be allowed when it is reasonably necessary for locatable mineral activities and leasable mineral activities on existing leases. This will not impinge upon any statutory or existing lease rights, thus avoiding any potential takings issues. Presently, the only existing mineral leases within roadless areas are phosphate leases in the Caribou-Targhee NF.

The most significant mineral-related impact of prohibiting road construction or reconstruction in Idaho's roadless areas would be that it would restrict industry from effectively exploring for geothermal and oil and gas on these lands. Geothermal and oil and gas are most affected because there are no existing leases for these resources on

NFS lands within the State. Without exploration, we are unable to expand upon our current knowledge of the nature and extent of geothermal and oil and gas resources within roadless areas. Without more knowledge of these energy resources, it is difficult to accurately identify their development potential and the socio-economic impacts of not developing that potential. This impact is greatest under the 2001 Roadless Rule, but all of the alternatives would cause significant amounts of lands with medium to high potential geothermal and medium potential oil and gas to not be explored.

For Idaho's roadless areas, all of the alternatives should have little impact to the production of salable minerals, the ability to respond to CERCLA problems at abandoned mine sites, and the management of geologic and paleontological sites.

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